



Testimony

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Science, and Transportation,
United States Senate

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RAILROAD SAFETY

DOT Faces Challenges in Improving Grade Crossing Safety, Track Inspection Standards, and Passenger Car Safety

Statement for the Record by
Phyllis F. Scheinberg, Associate Director,
Transportation and Telecommunications Issues,
Resources, Community, and Economic
Development Division



Mr. Chairman and Members of the Committee:

We appreciate the opportunity to provide this statement for the record on several issues affecting safety on the nation's rail lines. Recent rail accidents at Cajon Pass, California; Silver Spring, Maryland; and Weyauwega, Wisconsin, have heightened concern about the safety of passenger and freight lines in the United States. Since 1987, GAO has issued many reports describing safety problems on the nation's rail lines. This statement is based on recent GAO reviews of safety at highway railroad crossings, the adequacy of track safety inspections and enforcement, and the safety of passenger cars operated by commuter railroads and Amtrak. In summary, we found the following:

- Accidents at railroad crossings are the leading cause of deaths associated with the railroad industry; almost half of all rail-related deaths in the United States are caused by collisions of trains and vehicles at public railroad crossings. In 1994, these collisions killed 501 people and injured 1,764 others. Strategies to improve safety at railroad crossings include targeting funds to high-risk areas through revisions in the Department of Transportation's (DOT) formula for distributing railroad improvement funds to the states; closing more railroad crossings; installing new technologies, such as four-quadrant gates, at the most dangerous crossings; and developing education and enforcement programs that increase the public's awareness of the dangers of railroad crossings. Although DOT has an action plan incorporating these strategies, the plan will be costly to implement and will require DOT to seek congressional approval to implement key proposals.
- The Federal Railroad Administration (FRA) has developed an overall strategy for inspecting and enforcing track safety standards. As we recommended in our 1994 report,¹ to further strengthen the rail safety program, FRA needs to include site-specific data on volumes of passenger and hazardous materials traffic in its inspection plan and improve the reliability of its accident and injury data. Information on the numbers of passengers and amounts of hazardous materials transported is important, since train routes carrying these types of traffic must be adequately maintained to prevent accidents that will injure passengers or expose populated areas to chemical risks. Accurate and complete information on the numbers of accidents and injuries is equally important in identifying high-risk routes. However, FRA's database, derived from the industry's reports to FRA, is inaccurate and incomplete. Without reliable information

¹Railroad Safety: Continued Emphasis Needed for an Effective Track Safety Inspection Program, (GAO/RCED-94-56, Apr. 22, 1994).

on passenger and hazardous materials traffic, accidents, and injuries, FRA and its inspectors do not have the means to direct inspectors to the routes that have the highest potential for accidents.

- Although Amtrak and commuter railroads transport over 20 and 330 million passengers, respectively, each year, FRA has established few regulations concerning passenger car safety. FRA does not have minimum safety standards for mechanical components on passenger cars, as it does for freight cars and locomotives. In 1984, FRA informed the Congress that it planned to study the need for standards governing the condition of safety-critical passenger car components. The Congress subsequently directed FRA, in the Swift Rail Development Act of 1994, to complete rulemaking governing passenger car safety by 1999.

Improving Railroad Crossing Safety

On October 25, 1995, Americans were reminded of the dangers that drivers/passengers often face when they travel over railroad crossings in the United States. On that day, in Fox River Grove, Illinois, seven high school students were killed when a commuter train hit a school bus.

The potential for tragedies like the one at Fox River Grove is significant—the United States has over 168,000 public highway-railroad intersections. The types of warning for motorists at these crossings range from no visible devices to active devices, such as lights and gates. About 60 percent of all public crossings in the United States have only passive warning devices—typically, highway signs known as crossbucks. In 1994, this exposure resulted in motor vehicle accidents at crossings that killed 501 people and injured 1,764 others. Many of these deaths should have been avoided, since nearly one-half occurred at crossings where flashing lights and descended gates had warned motorists of the approaching danger.

In August 1995, we issued a comprehensive report on safety at railroad crossings.² We reported that the federal investment in improving railroad crossing safety had noticeably reduced the number of deaths and injuries. Since the Rail-Highway Crossing Program—also known as the section 130 program—was established in 1974, the federal government has distributed about \$5.5 billion (in 1996 constant dollars) to the states for railroad crossing improvements. This two-decade investment, combined with a reduction in the total number of crossings since 1974, has significantly lowered the accident and fatality rates—by 61 percent and 34 percent,

²Railroad Safety: Status of Efforts to Improve Railroad Crossing Safety, (GAO/RCED-95-191, Aug. 3, 1995).

respectively. However, most of this progress occurred during the first decade, and since 1985, the number of deaths has fluctuated between 466 and 682 each year (see app. 1). Since 1977, the federal funding for railroad crossing improvements has also declined in real terms. Consequently, the question for future railroad crossing safety initiatives will be how best to target available resources to the most cost-effective approaches.

Our report discussed several strategies for targeting limited resources to address railroad crossing safety problems. The first strategy is to review DOT's current method of apportioning section 130 funds to the states. Our analysis of the 1995 section 130 apportionments found anomalies among the states in terms of how much funding they received in proportion to three key risk factors: accidents, fatalities, and total crossings. For example, California received 6.9 percent of the section 130 funds in 1995, but it had only 4.8 percent of the nation's railroad crossings, 5.3 percent of the fatalities, and 3.9 percent of the accidents. Senators Lugar and Coats have proposed legislation to change the formula for allocating section 130 funds by linking the amounts of funding directly to the numbers of railroad crossings, fatalities, and accidents. Currently, section 130 funds are apportioned to each state as a 10-percent set-aside of its Surface Transportation Program funds.

The second means of targeting railroad crossing safety resources is to focus the available dollars on the strategies that have proved most effective in preventing accidents. These strategies include closing more crossings, using innovative technologies at dangerous crossings, and emphasizing education and enforcement. Clearly, the most effective way to improve railroad crossing safety is to close more crossings. The Secretary of Transportation has restated FRA's goal of closing 25 percent of the nation's railroad crossings, since many are unnecessary or redundant. For example, in 1994, the American Association of State Highway and Transportation Officials found that the nation had two railroad crossings for every mile of track and that in heavily congested areas, the average approached 10 crossings for every mile. However, local opposition and localities' unwillingness to provide a required 10-percent match in funds have made it difficult for the states to close as many crossings as they would like. When closing is not possible, the next alternative is to install traditional lights and gates. However, lights and gates provide only a warning, not positive protection at a crossing. Hence, new technologies such as four-quadrant gates with vehicle detectors, although costing about \$1 million per crossing, may be justified when

accidents persist at signalled crossings. The Congress has funded research to develop innovative technologies for improving railroad crossing safety.

Although installing lights and gates can help to prevent accidents and fatalities, it will not preclude motorists from disregarding warning signals and driving around descended gates. Many states, particularly those with many railroad crossings, face a dilemma. While 35 percent of the railroad crossings in the United States have active warning devices, 50 percent of all crossing fatalities occurred at these locations. To modify drivers' behavior, DOT and the states are developing education and enforcement strategies. For example, Ohio—a state with an active education and enforcement program—cut the number of accidents at crossings with active warning devices from 377 in 1978 to 93 in 1993—a 75-percent reduction. Ohio has used mock train crashes as educational tools and has aggressively issued tickets to motorists going around descended crossing gates. In addition, DOT has inaugurated a safety campaign entitled “Always Expect a Train,” while Operation Lifesaver, Inc., provides support and referral services for state safety programs.³

DOT's educational initiatives are part of a larger plan to improve railroad crossing safety. In June 1994, DOT issued a Grade Crossing Action Plan, and in October 1995, it established a Grade Crossing Safety Task Force. The action plan set a national goal of reducing the number of accidents and fatalities by 50 percent from 1994 to 2004. As we noted in our report, whether DOT attains the plan's goal will depend, in large part, on how well it coordinates the efforts of the states and railroads, whose contributions to implementing many of the proposals are critical. DOT does not have the authority to direct the states to implement many of the plan's proposals, regardless of how important they are to achieving DOT's goal. Therefore, DOT must rely on either persuading the states that implementation is in their best interests or providing them with incentives for implementation. In addition, the success of five of the plan's proposals depends on whether DOT can obtain the required congressional approval to use existing funds in ways that are not allowable under current law. The five proposals would (1) change the method used to apportion section 130 funds to the states, (2) use Surface Transportation Program funds to pay local governments a bonus to close crossings, (3) eliminate the requirement for localities to match a portion of the costs associated with closing crossings, (4) establish a \$15 million program to encourage the states to improve rail

³Operation Lifesaver is a private, not-for-profit organization supported by federal and railroad funds and dedicated to improving safety through education and improved law enforcement. Operation Lifesaver programs are currently operated in 49 states.

corridors, and (5) use Surface Transportation Program funds to increase federal funding for Operation Lifesaver.

Finally, the action plan's proposals will cost more money. Secretary Pena has announced a long-term goal of eliminating 2,250 crossings where the National Highway System intersects Principal Rail Lines. Both systems are vital to the nation's interstate commerce, and closing these crossings is generally not feasible. The alternative is to construct a grade separation—an overpass or underpass. This initiative alone could cost between \$4.5 billion and \$11.3 billion—a major infrastructure investment.

DOT established the Grade Crossing Safety Task Force in the aftermath of the Fox River Grove accident, intending to conduct a comprehensive national review of highway-railroad crossing design and construction measures. On March 1, 1996, the task force reported to the Secretary that “improved highway-rail grade crossing safety depends upon better cooperation, communication, and education among responsible parties if accidents and fatalities are to be reduced significantly.” The report provided 24 proposals for five problem areas it reviewed: (1) highway traffic signals that are supposed to be triggered by oncoming trains; (2) roadways where insufficient space is allotted for vehicles to stop between a road intersection and nearby railroad tracks; (3) junctions where railroad tracks are elevated above the surface of the roadway, exposing vehicles to the risk of getting hung on the tracks; (4) light rail transit crossings without standards for their design, warning devices, or traffic control measures; and (5) intersections where slowly moving vehicles, such as farm equipment, frequently cross the tracks.

Improving Track Safety

Under the Federal Railroad Safety Act of 1970, as amended, FRA is responsible for regulating all aspects of railroad safety. FRA's safety mission includes 1) establishing federal rail safety rules and standards; 2) inspecting railroads' track, signals, equipment, and operating practices; and 3) enforcing federal safety rules and standards. The railroads are primarily responsible for inspecting their own equipment and facilities to ensure compliance with federal safety regulations, while FRA monitors the railroads' actions.

We have issued many reports identifying weaknesses in FRA's railroad safety inspection and enforcement programs. For example, in July 1990, we reported on FRA's progress in meeting the requirements, set forth in the Federal Railroad Safety Authorization Act of 1980, that FRA submit to

the Congress a system safety plan to carry out railroad safety laws.⁴ The act directed FRA to (1) develop an inspection methodology that considered carriers' safety records, the location of population centers, and the volume and type of traffic using the track and (2) give priority to inspections of track and equipment used to transport passengers and hazardous materials. The House report accompanying the 1980 act stated that FRA should target safety inspections to high-risk track—track with a high incidence of accidents and injuries, located in populous urban areas, carrying passengers, or transporting hazardous materials. In our 1990 report, we found that the inspection plan that FRA had developed did not include data on passenger and hazardous materials routes—two important risk factors. In an earlier report, issued in April 1989, we noted problems with another risk factor—accidents and injuries.⁵ We found that the railroads had substantially underreported and inaccurately reported the number of accidents and injuries and their associated costs. As a result, FRA could not integrate inspection, accident, and injury data in its inspection plan to target high-risk locations.

In our 1994 report on FRA's track safety inspection program, we found that FRA had improved its track inspection program and that its strategy for correcting the weaknesses we had previously identified was sound. However, we pointed out that FRA still faced challenges stemming from these weaknesses. First, it had not obtained and incorporated into its inspection plan site-specific data on two critical risk factors—the volume of passenger and hazardous materials traffic. Second, it had not improved the reliability of another critical risk factor—the rail carriers' reporting of accidents and injuries nationwide. FRA published a notice of proposed rulemaking in August 1994 on methods to improve rail carriers' reporting. In February 1996, FRA reported that it intended to issue a final rule in June 1996.

To overcome these problems, we recommended that FRA focus on improving and gathering reliable data to establish rail safety goals. We specifically recommended that FRA establish a pilot program in one FRA region to gather data on the volume of passenger and hazardous materials traffic and correct the deficiencies in its accident/injury database. We recommended a pilot program in one FRA region, rather than a nationwide program, because FRA had expressed concern that a nationwide program would be too expensive. The House and Senate Appropriations

⁴Railroad Safety: New Approach Needed for Effective FRA Safety Inspection Program (GAO/RCED-90-194, July 31, 1990).

⁵Railroad Safety: FRA Needs to Correct Deficiencies in Reporting Injuries and Accidents (GAO/RCED-89-109, Apr. 5, 1989).

Conference Committee echoed our concerns in its fiscal year 1995 report and directed the agency to report to the Committees by March 1995 on how it intended to implement our recommendations. In its August 1995 response to the Committees, FRA indicated that the pilot program was not necessary, but it was taking actions to correct the deficiencies in the railroad accident/injury database. For example, FRA had allowed the railroads to update the database using magnetic media and audited the reporting procedures of all the large railroads.

We also identified in our 1994 report an emerging traffic safety problem—the industry’s excessive labeling of track as exempt from federal safety standards. Since 1982, federal track safety standards have not applied to about 12,000 miles of track designated by the industry as “excepted;” travel on such track is limited to 10 miles per hour, no passenger service is allowed, and no train may carry more than five cars containing hazardous materials. We found in our 1994 report that the number of accidents on excepted track had increased from 22 in 1988 to 65 in 1992—a 195-percent increase. Similarly, the number of track defects cited in FRA inspections increased from 3,229 in 1988 to 6,057 in 1992. However, with few exceptions, FRA cannot compel railroads to correct these defects. According to FRA, the railroads have applied the excepted track provision far more extensively than envisioned. For example, railroads have transported hazardous materials through residential areas on excepted track or intentionally designated track as excepted to avoid having to comply with minimum safety regulations. In November 1992, FRA announced a review of the excepted track provision with the intent of making changes. FRA viewed the regulations as inadequate because its inspectors could not write violations for excepted track and railroads were not required to correct defects on excepted track.

FRA stated that changes to the excepted track provision would occur as part of its rulemaking revising all track safety standards. In February 1996, FRA reported that the task of revising track safety regulations would be taken up by FRA’s Railroad Safety Advisory Committee. FRA noted that this committee would begin its work in April 1996 but did not specify a date for completing the final rulemaking. The Congress had originally directed FRA to complete its rulemaking revising track safety standards by September 1994.

Improving Passenger Car Safety

In September 1993, we issued a report examining whether Amtrak had effective procedures for inspecting, repairing, and maintaining its

passenger cars to ensure their safe operation and whether FRA had provided adequate oversight to ensure the safety of passenger cars.⁶ We found that Amtrak had not consistently implemented its inspection and preventive maintenance programs and did not have clear criteria for determining when a passenger car should be removed from service for safety reasons. In addition, we found that Amtrak had disregarded some standards when parts were not available or there was insufficient time for repairs. For example, we observed that cars were routinely released for service without emergency equipment, such as fire extinguishers. As we recommended, Amtrak established a safety standard that identified a minimum threshold below which a passenger car may not be operated, and it implemented procedures to ensure that a car will not be operated unless it meets this safety standard.

In reviewing FRA's oversight of passenger car safety (for both Amtrak and commuter rail), we found that FRA had established few applicable regulations. As a result, its inspectors provided little oversight in this important safety area. For more than 20 years, the National Transportation Safety Board has recommended on numerous occasions that FRA expand its regulations for passenger cars, but FRA has not done so. As far back as 1984, FRA told the Congress that it planned to study the need for standards governing the condition of safety-critical passenger car components.

Between 1990 and 1994, train accidents on passenger rail lines ranged between 127 and 179 accidents each year (see app. 2). In our 1993 report, we maintained that FRA's approach to overseeing passenger car safety was not adequate to ensure the safety of the over 330 million passengers who ride commuter railroads annually. We recommended that the Secretary of Transportation direct the FRA Administrator to study the need for establishing minimum criteria for the condition of safety-critical components on passenger cars. We noted that the Secretary should direct the FRA Administrator to establish any regulations for passenger car components that the study shows to be advisable, taking into account any internal safety standards developed by Amtrak or others that pertain to passenger car components. However, FRA officials told us at the time that the agency could not initiate the study because of limited resources.

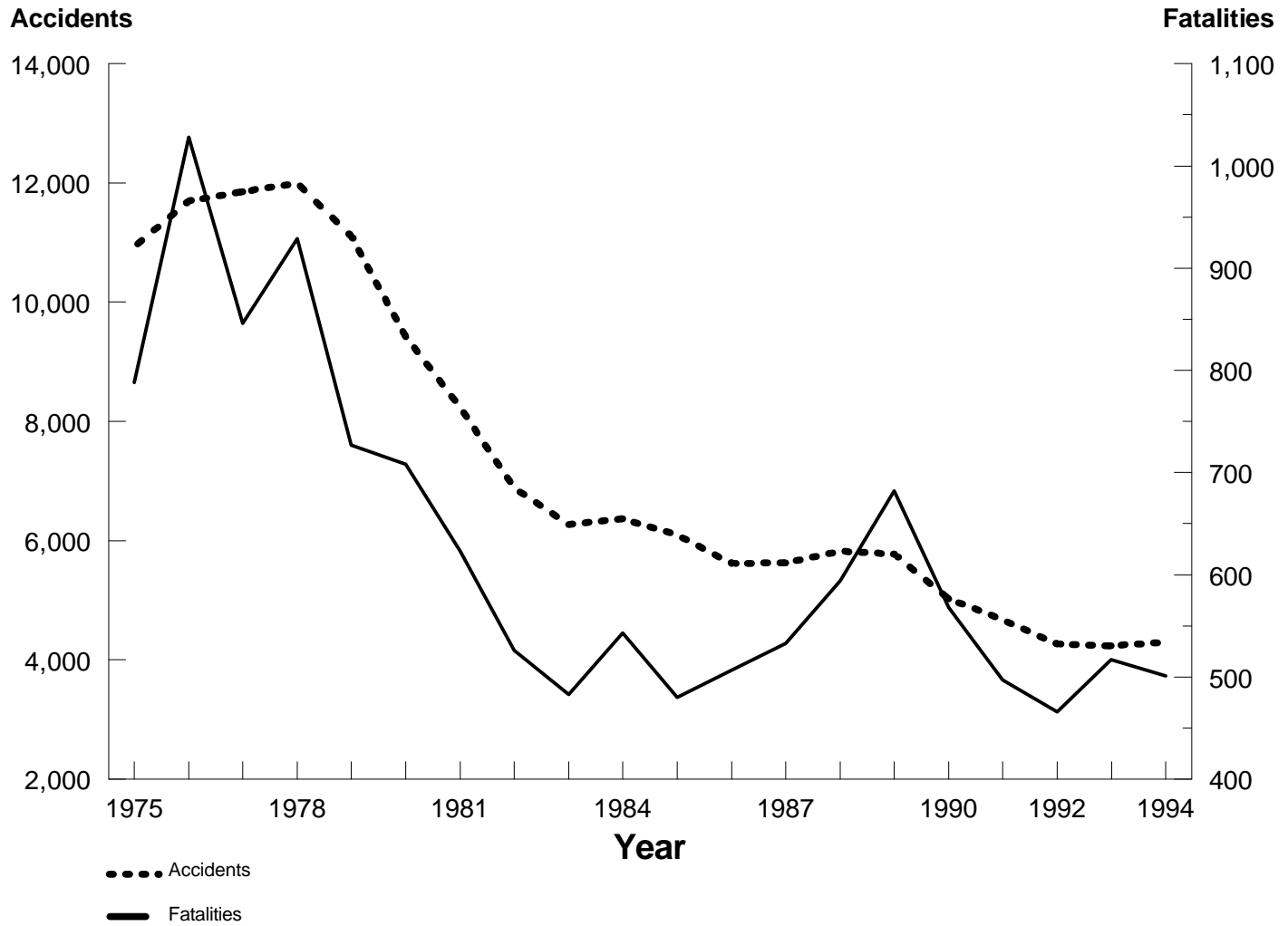
Subsequently, the Swift Rail Development Act of 1994 required FRA to issue initial passenger safety standards within 3 years of the act's

⁶Amtrak Safety: Amtrak Should Implement Minimum Safety Standards for Passenger Cars (GAO/RCED-93-196, Sept. 22, 1993).

enactment and complete standards within 5 years. In 1995, FRA referred the issue to its Passenger Equipment Safety Working Group consisting of representatives from passenger railroads, operating employee organizations, mechanical employee organizations, and rail passengers. The working group held its first meeting in June 1995. An advance notice of proposed rulemaking is expected in early 1996, and final regulations are to be issued in November 1999. Given the recent rail accidents, FRA could consider developing standards for such safety-critical components as emergency windows and doors and safety belts as well as the overall crashworthiness of passenger cars.

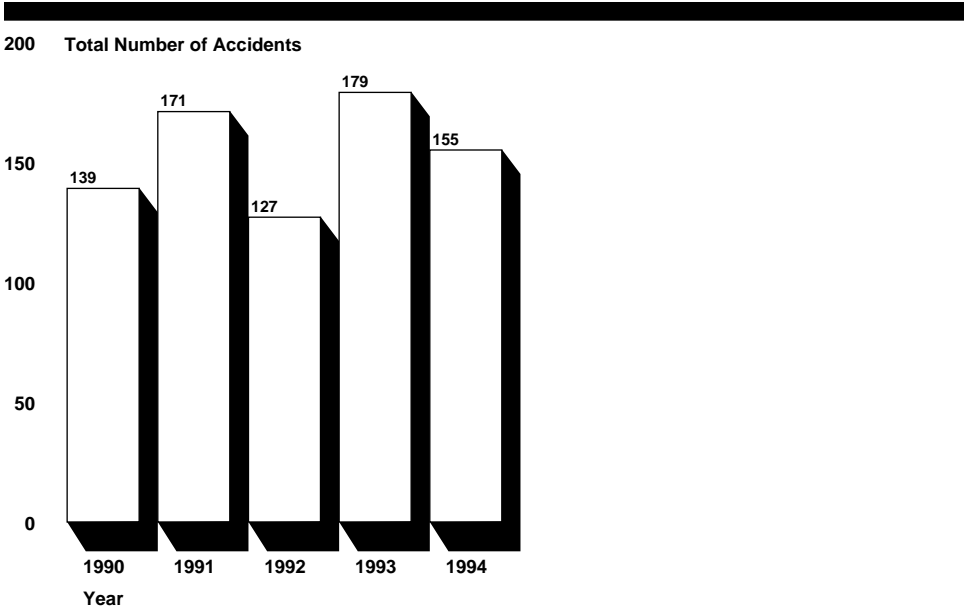
In conclusion, safety at highway-railroad crossings, the adequacy of track safety inspections and enforcement, and the safety of passenger cars operated by commuter railroads and Amtrak will remain important issues for Congress, FRA, the states, and the industry to address as the nation continues its efforts to prevent rail-related accidents and fatalities.

Accidents and Fatalities at Public Railroad Crossings 1975-94



Source: GAO's analysis of data from FRA.

Passenger Rail Accidents 1990-94



Note 1: Analysis includes data from Amtrak, Long Island Rail Road, Metra (Chicago), Metro-North (New York), Metrolink (Los Angeles), New Jersey Transit, Northern Indiana, Port Authority Trans-Hudson (New York), Southeastern Pennsylvania Transportation Authority and Tri-Rail (Florida).

Note 2: Data for Amtrak include statistics from several commuter railroads, including Caltrain (California), Conn DOT, Maryland Area Rail Commuter (excluding those operated by CSX), Massachusetts Bay Transportation Authority, and Virginia Railway Express.

Source: GAO's analysis of data from FRA.

Related GAO Products

Railroad Safety: FRA Needs to Correct Deficiencies in Reporting Injuries and Accidents (GAO/RCED-89-109, Apr.5,1989).

Railroad Safety: DOT Should Better Manage Its Hazardous Materials Inspection Program (GAO/RCED-90-43, Nov.17, 1989).

Railroad Safety: More FRA Oversight Needed to Ensure Rail Safety in Region 2 (GAO/RCED-90-140, Apr. 27, 1990).

Railroad Safety: New Approach Needed for Effective FRA Safety Inspection Program (GAO/RCED-90-194, July 31, 1990).

Financial Management: Internal Control Weaknesses in FRA's Civil Penalty Program (GAO/RCED-91-47, Dec.26, 1990).

Railroad Safety: Weaknesses Exist in FRA's Enforcement Program (GAO/RCED-91-72, Mar.22, 1991).

Railroad Safety: Weaknesses in FRA's Safety Program (GAO/T-RCED-91-32, Apr. 11, 1991).

Hazardous Materials: Chemical Spill in the Sacramento River (GAO/T-RCED-91-87, July 31, 1991).

Railroad Competitiveness: Federal Laws and Policies Affect Railroad Competitiveness (GAO/RCED-92-16, Nov. 5, 1991)

Railroad Safety: Accident Trends and FRA Safety Programs (GAO/T-RCED-92-23, Jan.13, 1992).

Railroad Safety: Engineer Work Shift Length and Schedule Variability (GAO/RCED-92-133, Apr. 20, 1992).

Amtrak Training: Improvements Needed for Employees Who Inspect and Maintain Rail Equipment (GAO/RCED-93-68, Dec.8, 1992).

Amtrak Safety: Amtrak Should Implement Minimum Safety Standards for Passenger Cars (GAO/RCED-93-196, Sep.22, 1993).

Railroad Safety: Continued Emphasis Needed for an Effective Track Safety Inspection Program (GAO/RCED-94-56, Apr.22, 1994).

Related GAO Products

Amtrak's Northeast Corridor: Information on the Status and Cost of Needed Improvements (GAO/RCED-95-151BR, Apr. 13, 1995).

Railroad Safety: Status of Efforts to Improve Railroad Crossing Safety (GAO/RCED-95-191, Aug. 3, 1995).

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